MuSkLE PhD programme
Building, maintaining and repairing the functional locomotor system

Co-funded by the European Union

PhD Position 14 job vacancy

Reference:	**PP14**
Title:	**Validation of a murine model of rheumatoid arthritis via intestinal dysbiosis and regulatory T-cell (Treg) dysregulation**
Hiring institution:	**UJM**
Location:	University Jean Monnet, St Etienne, France.
Start date:	As from 1st September 2027
Duration:	36 months
Application deadline:	15th January 2027

Job description

Objective:	**The recruited doctoral fellow (DF14)** will elucidate the temporal sequence of molecular and cellular events driving very early disease progression in rheumatoid arthritis (RA). The pre-clinical phase of RA is characterized by perturbations in the dynamics of both circulating naive and Treg $CD4^+$ T-cells. We hypothesize that dysbiosis of the gut microbiota (GM), which is observed pre-onset of symptoms in RA, plays a pivotal role in shaping the immune system. The aim is to establish causal relationship between clinical observations and the cascade of event leading the disease progression. Our hypothesis stem from the fact that dysbiosis can modify the GM, resulting in changes in the balance of immunomodulatory metabolites, such short-chain fatty acids (SCFAs) that regulate the development of Treg and Th17 cells, via the epigenetic remodelling. This gut::immune system interaction may therefore result in an unstable immune state that would no-longer support the resolution of various antigenic challenges, perpetuating inflammation. Objectives are: • In pre-RA patients with hand arthralgia but no clinical disease (collaboration with CHU Saint-Etienne), collect blood and stool samples to validate models of the prediction of progression • Assessing T-cell subsets by flow cytometry for naïve, Treg and Th17 and stratify patients for progression • Develop a qPCR panel for quantitative dysbiosis (multiple bacterial families) • Develop in vitro models for functional tests of gut permeability, human naïve T-cell differentiation into Treg/Th17, and use an artificial gut reactor for assessing metabolite production from patient samples • Use a rat model to characterise immune events leading to RA (immune cell disturbances), the effects of preventing rat from using their legs, and whether faecal transplantation of GM from pre-RA patients can induce arthritis in rat (like in mice) that could then be prevented if rat are unable to use their legs. This project will open new avenues for preventing the development of RA and allow innovative technologies to be transferred to clinical service for direct patient benefit.
Collaborations and co-supervisions:	The PhD project will be supervised by Pr. Frederique Ponchel.
Supervisors:	Main supervisor: Pr. Frédérique Ponchel (Frederique.Ponchel@univ-st-etienne.fr)
Place of work:	**Laboratoire SAINBIOSE, BOOST -** Faculté de Médecine - Campus Santé Innovations 10 RUE de la Marandière - 42270 Saint-Priest-en-Jarez - France
Required degree	Master's degree or equivalent in cell and or molecular biology with a minor in immunology

Skills/Experience:	Mandatory • Handling of human biological material (Blood, stool) • Tissue culture of human primary cells • DNA and RNA extraction, • qPCR. Desirable • Animal experimentation • Immune cell differentiation assays (Treg, Th17) • Microbiology
Keywords	Rheumatoid arthritis; T-cells, Treg; Dysbiosis; Anula model; Prevention of disease progression

Mandatory requirements

Eligibility:	The doctoral fellow: - should not have resided or carried out his/her main activity (work, study) in the country where he/she is being recruited, i.e., France, **for more than 12 months in the 3 years before the application call deadline,** unless this time was part of a compulsory national service or a procedure for obtaining refugee status under the Geneva Convention. - **must be in possession of a master's degree** at the date of the call deadline. Applicants who have completed their cursus but not yet been awarded the formal master's degree by that date will not be considered eligible. - must be **a doctoral candidate** (not already in possession of a doctoral degree at the date of the application call deadline).
Languages:	Oral and written skills must meet the standards of academic English used in international research.

Job details

Type of contract:	Full time position
Gross salary:	The monthly living allowance, including employer and employees' social charges, is €3,500. This amount corresponds to a gross monthly salary estimated to €2,472 and to an estimated net monthly salary before income tax of €1,985.68. In addition to the salary, the doctoral researcher will receive a **mobility allowance corresponding to a total employment cost of €132 per month** (€4752 over 36 months), including employer and employees' social charges to support relocation and mobility-related expenses.
Other benefits:	**Social Protection**: The doctoral researcher will benefit from **full social security coverage**, including health insurance, unemployment insurance, and pension contributions. They will also have access to occupational health services (*médecine du travail*), in accordance with the French public-sector employment framework. **Additional Insurance**: The doctoral researcher will benefit from an employer contribution of **€37.50 per month** towards complementary health insurance, in accordance with the applicable public-sector scheme. **Paid Leave**: The doctoral researcher is entitled to **49 days of paid leave annually** (for 38.5 hours worked per week), in accordance with UJM's working time arrangement, and will enjoy the same employment rights as other public-sector employees. **Relocation assistance**: Through its **EURAXESS Service Centre**, UJM provides dedicated support to international doctoral researchers before and during their stay in Saint-Étienne. Assistance includes visa and residence permit procedures, accommodation guidance, healthcare and administrative formalities, as well as practical advice on settling into France. International researchers and their families can also benefit from integration support and information on French language courses. More information: https://www.univ-st-etienne.fr/fr/international/enseignant-chercheur-post-doctorant-doctorant.html **Transport**: The University reimburses **75% of eligible public transport season-ticket costs** for commuting between home and work, up to a monthly ceiling of **€104.04**, in accordance with current French public-sector regulations. **Sports and culture**: UJM offers a vibrant campus environment and a wide range of sports and cultural activities. Doctoral researchers can access activities offered by the University's Sports Department (SUAPS), including fitness, team sports and well-being activities, subject to applicable registration conditions. The University also organises a rich cultural programme throughout the year, featuring concerts, theatre performances, exhibitions and creative workshops, many of which are free or offered at reduced rates.